A PERSPECTIVE from the

Virgin Islands Energy Office

Mission Statement

- The mission of the Virgin Islands Energy Office is to research, select, apply, and champion those Energy Efficiency and Renewable Energy technologies that are most optimal and suitable for our Virgin Islands community through general education, public outreach, and financial and technical assistance to the residents.

Distributed Generation

- small scale environmentally friendly technologies
- installed on and designed primarily to serve a single end-user's site
- any generation built near to a consumer's load regardless of size or energy source

Virgin Islands DG Public Policy Goals

- Secure Partnership with WAPA
- Research utilization of renewable/alternative energy resources as Distributed Energy Resources
- Conduct workshops for WAPA governing Board, the PSC and general public
- Development and Implementation of an interconnection policy for the Territory

Virgin Islands DG Public Policy Goals

- Secure Partnership with WAPA

Formation of DG TEAM

Jim Gibson
Park Service

May Cornwall,
WAPA

Guy Lacombe
FP&L

Bevan Smith
VIEO

Greg Willocks
WAPA

Melton Smith
WAPA

USDOE funds and participates

- David Waldrop (USDOE)
- Joins team at utility sponsored sites

- Leroy Prentice (WAPA) joins DG Team after volcanic ash delays flight.

Virgin Islands DG Public Policy Goals

- Research utilization of renewable/alternative energy resources as Distributed Energy Resources

Viable DG Technologies

- **FUEL CELLS**
- **MICROTURBINES**
- **PHOTOVOLTAIC SYSTEMS**
- **WIND**

Birch State Park

- 5 kW grid tied fuel cell
- Unit contains two major components:
- The fuel processor and power conditioner

DG TEAM VISITS
St. Thomas University

- **A stand-alone PV power system provides 5kW to the University.**
- **The Florida Power and Light and St. Thomas University have a Cooperative Fuel Cell and a Solar PV Project**

Hillsborough Landfill

- Tampa Electric Company maintains a 30 kW Capstone microturbine at this condemned landfill site

Hillsborough Landfill

18 kW grid-tied photovoltaic system

- TECO
- Subsidizes this system that utilizes 100% of solar energy produced

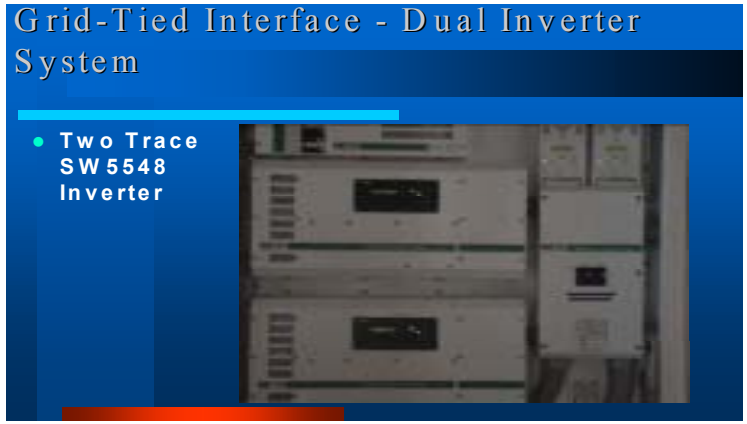
One hundred fifty 120-watt panels

20 kW grid tied PV array at University of South Florida


Electric Vehicle/Solar Energy
Program at USF


WARNING
BATTERY
CHARGING AREA
NO SMOKING
84 VOLT
PORT #6
Alltech Electronics

Cape Eleuthera Island School 23.5 kW hybrid PV/Wind power system.



Florida Solar Energy Center

- Review Industry-accepted Standards
- Photovoltaics Economics
- PV Sytems design review program
- Inverter non-islanding feature Tests

Florida Solar Energy Center

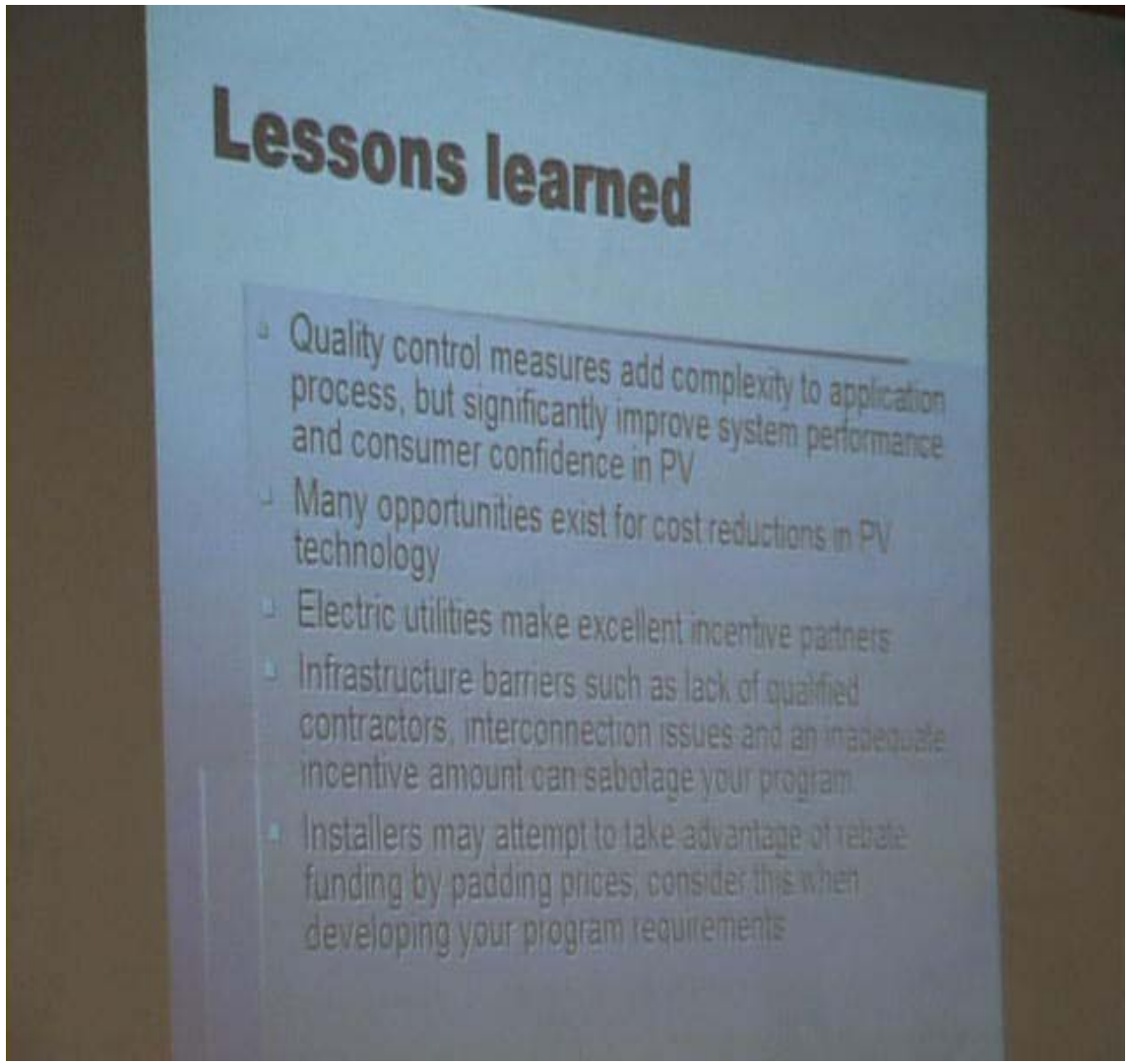
- Review Industry-accepted Standards

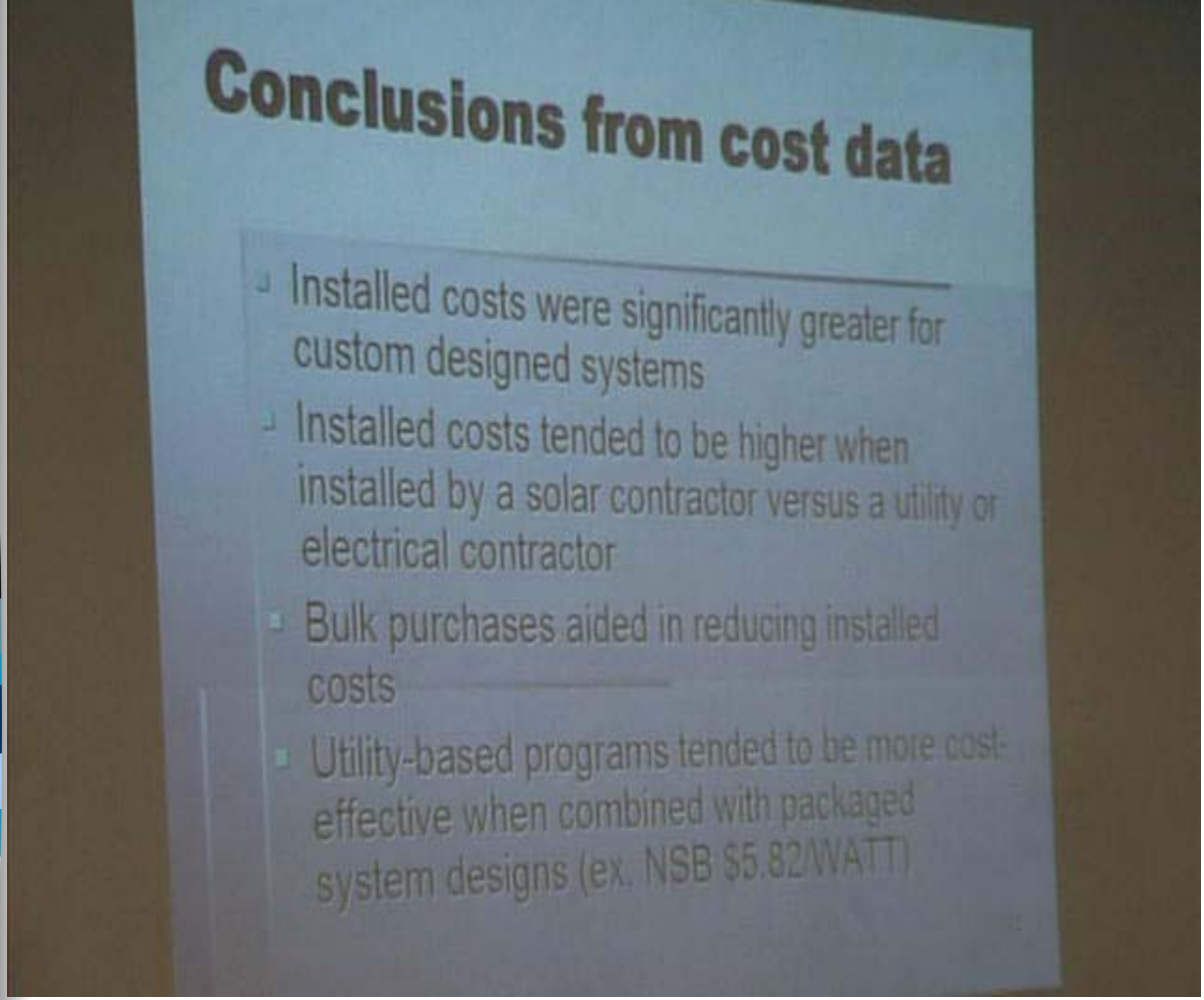
Development of an interconnection policy

- Investigate interconnection standards
  - UNDERWRITERS LABORATORY (UL) 1741
  - INSTITUTE OF ELECTRONICS AND ELECTRICAL ENGINEERS (IEEE) 929 & 1547
- Investigate site permitting and design
- Investigate building energy codes

Florida Solar Energy Center

Photovoltaics Economics




Conclusions from cost data
Installed costs were significantly greater for custom designed systems
Installed costs tended to be higher when installed by a solar contractor versus a utility or electrical contractor
Bulk purchases aided in reducing installed costs
Utility-based programs tended to be more cost-effective when combined with packaged system designs (ex. NSB $5.82/WATT)

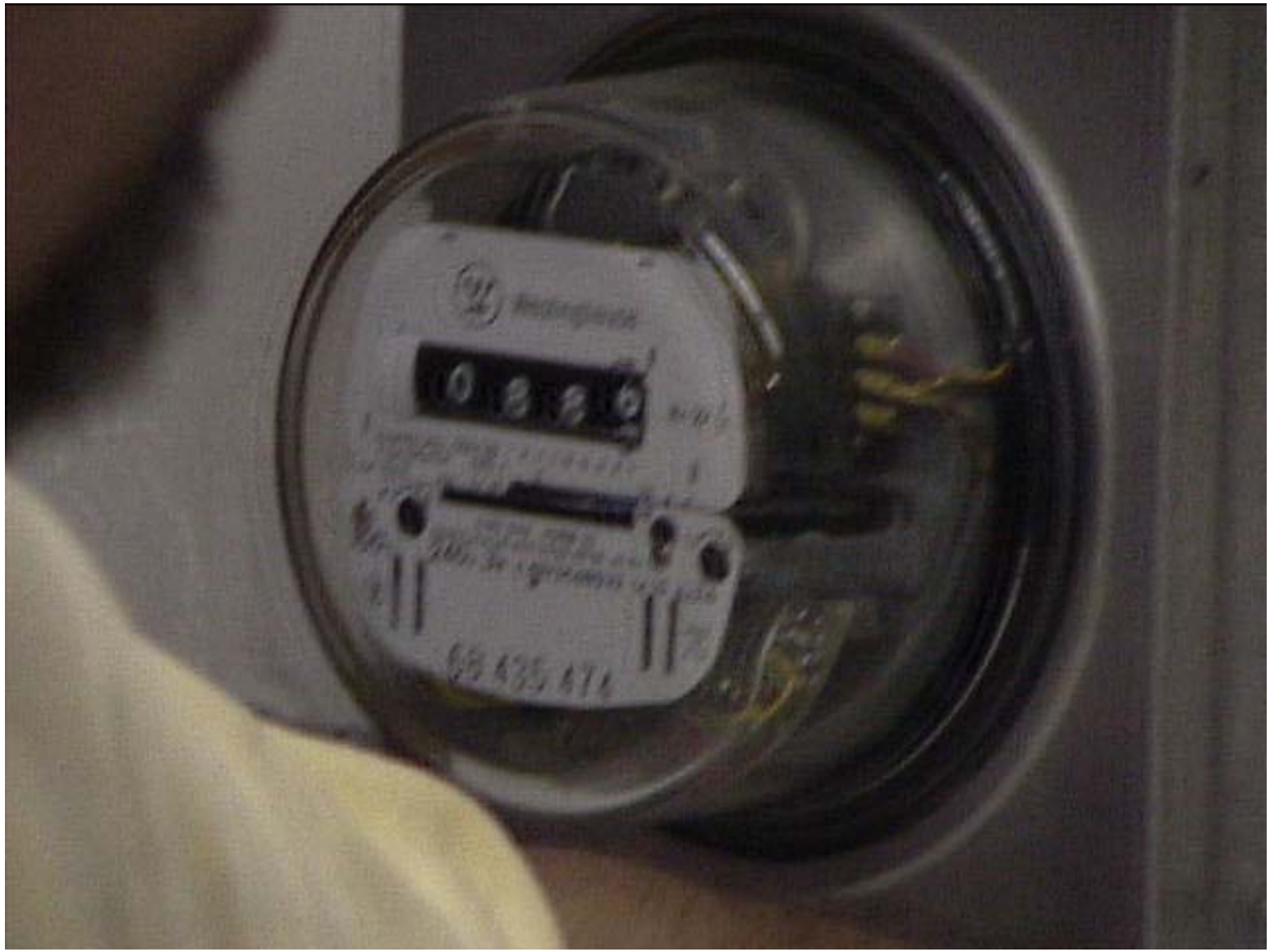
Florida Solar Energy Center

- PV Sytems design review program

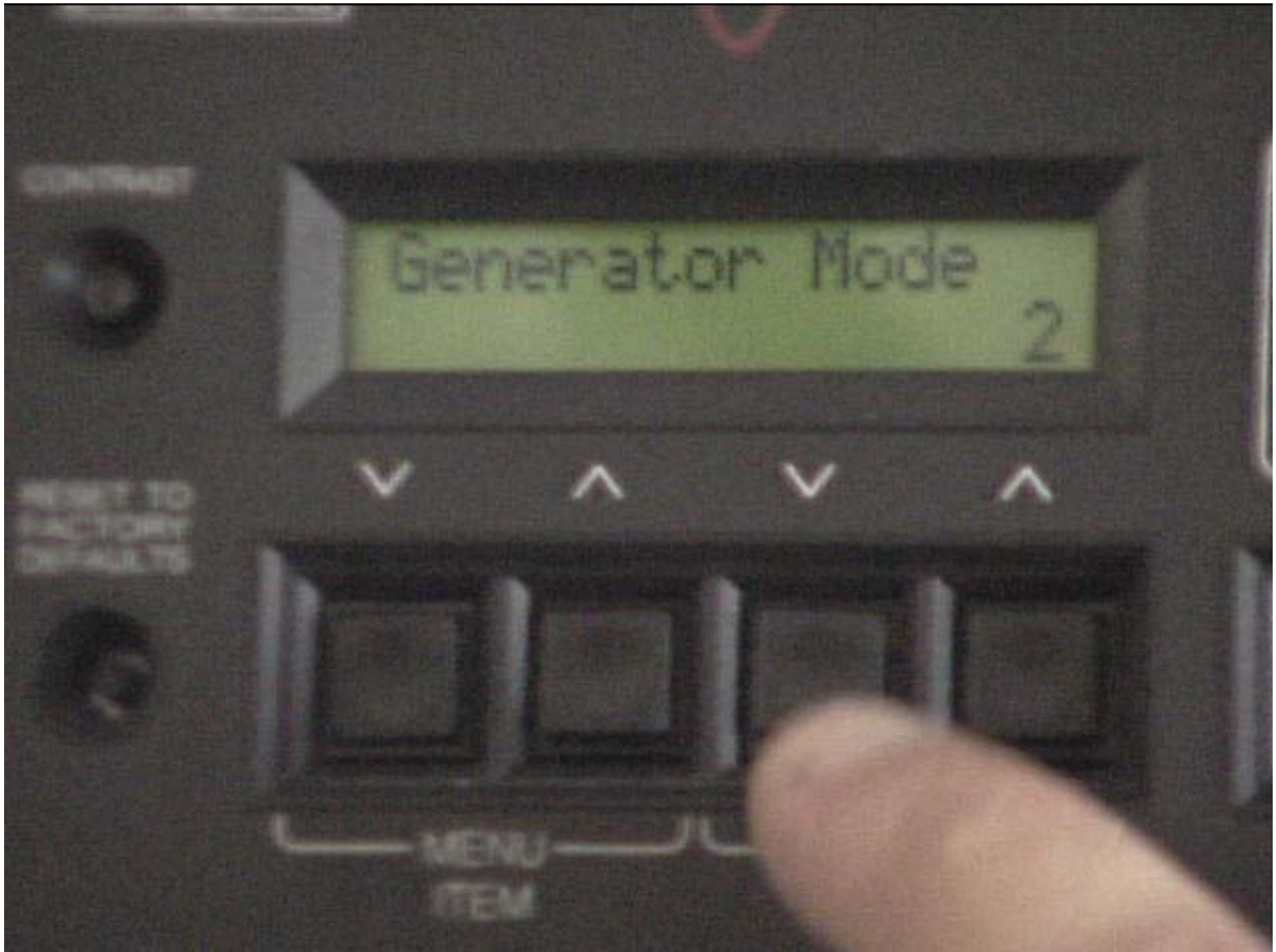

Grid-tied PV System Design
Review & Approval
What is a Design Review?
Quality Assurance
Safety/Code Compliance
Performance
Long-term System Viability
Installation
Accuracy/Repeatability

Inverter non-islanding Test

Meter turns in reverse



Inverter can start up generator



Back-up Battery Bank provides power during outages

IMPORTANCE OF DG RESEARCH

- Implementation of Act No. 5006 which amended Section 1, Title 30, of the Virgin Islands Code. This allows small power production facilities to interconnect with the local electric utility and sell excess generated electric energy to that utility.

- To pilot seven photovoltaic grid-interconnected small power production systems for grantees who submitted innovative renewable energy proposals

IMPORTANCE OF DG RESEARCH

- Assist the PSC determining such requirements relative to the minimum size, fuel use and efficiency of a “Qualifying Cogeneration Facility”.
- Assist WAPA in addressing safety issues pertaining to interconnectivity to the utility grid

Piloting Grid-tied PV Power Systems of VIEO Grantees/Partners

- Innovative Renewable Energy Grant recipients = 8 kW
- Nature Conservancy = 8 kW
- Coral World = 5 kW
- Estate Harmony Maho Bay = 5kW

Stand-Alone VI Energy Office
St. Thomas U.S. Virgin Islands

SUNPOWER at WORK

ARRAY OF SOLAR PANELS

Disadvantages to Stand-Alone systems

- Limited power during cloudy days
- No ability to sell excess power during hot sunny weekends
- Batteries have shortened life

Battery Bank Recurring Life Cycle Cost

- Replaced Battery Bank after a few years

Virgin Islands DG Public Policy Goals

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THANK YOU

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